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FRESH MARKET STAKE TOMATO TRIALS, 1981

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This is another report of a continuing series designed to evaluate currently used and new cultivars of tomatoes.

Stake Trial. Ten cultivars were grown with 3 replications and 40 others were grown in non-replicated observation plots. Spacing was 48 inches between rows and 18 inches between plants within rows. There were 10 plants per single row plot, equivalent to 7,260 plants per acre. Plants were pruned to 2 stems by allowing the first lateral below the first flower cluster to develop. All other laterals were removed to the sixth flower cluster. The first 2 flower clusters were pruned this year in order to increase overall plant vigor. Plants were hardened prior to planting due to abnormally high amounts of rainfall early in the season which delayed planting.

Cultural Practices. Seed was sown on April 10, 1981. Seedlings were transplanted to 2-1/4" cell packs on April 20 and field set on June 8. One thousand pounds per acre 15-15-15 were plowed down on March 17. At field planting, each plant received 1/2 pint of 10-52-8 starter solution at 3 lb. per 50 gallons. Seventy-five lb/A 33.5-0-0 was sidedressed on July 1. Enide, at the recommended rate, was applied on June 9 for weed control. Irrigation was applied at a rate of 1" per week as needed.

Weather Data. National Oceanic and Atmospheric Administration

	Mean Temperatures (°F)			Precipitation	
Month	Max.	Min.	Avg.	Rain(inches)	Deviation from Normal
May	69.5	49.5	59.5	6.50	+2.40
June	80.8	60.9	70.9	5.73	+1.60
July	81.8	62.0	71.9	4.14	-0.07
August	80.5	60.2	70.4	1.41	-1.45
September	71.9	52.6	62.3	2.28	-0.13
October	62.7	39.4	51.1	1.40	-0.49

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1/82-S444/200

Seed Source

Agway, Inc., Vegetable Seed Farm, Prospect, PA 16052
Asgrow Seed Co., Kalamazoo, Michigan 49003
George J. Ball, Inc., West Chicago, ILL 60185
W. Atlee Burpee Co., Philadephia, PA 19132
A. L. Castle, Inc., P. O. Box 877, Morgan Hill, CA 95037
Ferry-Morse Seed Co., San Juan Bautista, CA 95045
Goldsmith Seeds, Inc., Gilroy, CA 95020
Joseph Harris Co., Rochester, NY 14624
Lethermans Seed Co., Canton, OH 44707
Niagara, FMC Corp., Modesto, CA 95618
Northrup King & Co., P. O. Box 959, Minneapolis, MN 55440
Ohio State University, 2001 Fyffe Court, Columbus, OH 43210
Park Seed Wholesale, Inc., Greenwood, S.C. 29646
Peto Seed Co., Inc. Box 4206, Saticoy, CA 93003
Stokes Seeds, Inc., 737 Main St., Box 548, Buffalo, NY 14240
Otis S. Twilley Seed Co., Inc., P. O. Box 65, Trevose, PA 19047
Vaughan-Jacklin Corp., Downer's Grove, ILL 60515

Results and Discussion

The first harvest was made on August 18 and the last on October 23. Harvesting was begun a month later than usual since the first 2 flower clusters were pruned to increase the initially poor plant vigor. Yields, therefore, were also lower this year than in past years, and average fruit size, particularly in the replicated trial, was larger than usual. Yield results of the replicated trial are in Table 1. Only total yield values were calculated this year since harvesting commenced so late in the season. All plants in the first replication suffered from extremely poor growth in their location in the plots. Variation between this replication and the other two was significant for all cultivars.

Ramapo ranked highest in total pounds of number 1 fruit, second highest in total marketable yield, and third largest in fruit size. Since Ramapo generally does well later in the season, its high ranking is in conjunction with the lateness of this year's crop. Supersonic B was second to Ramapo in total pounds of number 1 yield, highest in total marketable yield, and largest in fruit size. Supersonic B also did well in the 1980 stake trial. Super Red placed third in both number 1 and total yields, with an average fruit size, while Burpee's Big Girl also had good number 1 and total yields with the second largest rating in fruit size.

Observation trial results (Table 2) also reflected the lateness of the crop; early lines such as Early Girl, Early Cascade, Earlirouge, etc. rated at the bottom of the list. Again, results of both trials must be interpreted on the basis that the first two flower clusters were pruned, resulting both in later and lower yield data.

As in the 1980 trial, yields of some observation cultivars were greater than the best yields in the replicated trial. The most promising cultivars in terms of yield include Castlehy 105, GS 430, GS 244 (also good in 1980), Market Hybrid #45, and Duke. Duke has also looked good in other areas of the state. GS 431, a larger-fruited cultivar, also did well both this year and last year. Mainpak had the highest total yield and placed second in yield of number ones.

Note: No Cage Trial performed this year.

Disease Resistance, Fruit Quality, and Plant Habit. All the cultivars tested in the stake trial were rated for internal appearance and fruit defects. Table 3 lists these results along with disease resistances for each. Plant habit classifications, i.e. indeterminate, determinate, and semi-determinate, are listed in the final column. It is suggested that the reader note cultivars of interest from a yield standpoint and then check Table 3 to determine plant habit, disease resistance, and quality ratings. The cultivars in Table 3 are listed in the same order as they appear in Tables 1 and 2. Growers wanting to test new cultivars should test small amounts the first year to assess performance under particular conditions.

Table 1. Replicated Stake Trial: Yield, Grade, and Fruit Size of Tomato Cultivars, Columbus, Ohio, 1981

Cultivar**	Seed Source	Total Harvest-Aug. 18 to Oct. 23, 1981*				
		Marketable Yield (Tons/Acre)		Percent By Weight		Fruit Size (oz.)
		No. 1	Total	No. 1	Cull	
Ramapo	Vaughan-Jacklin	9.01	11.87	69	9	6.12
Supersonic B	Harris	8.12	12.78	59	7	6.25
Super Red	Agway	6.19	11.32	49	10	5.83
Burpee's Big Girl	Burpee	5.28	10.02	48	9	6.21
Jet Star	Harris	5.24	7.85	60	10	5.18
PSR 25277	Peto	5.21	8.15	56	12	5.92
Ohio 6WRP	Ohio State U.	4.90	7.96	56	9	6.05
Better Boy VFN	Ball	4.78	9.55	47	7	5.92
Monte Carlo VFN	Peto	4.61	9.12	46	9	5.37
PSX 121375	Peto	4.61	7.98	50	14	5.56
LSD (5%)***		N.S.	N.S.			0.69

* Early harvest lost due to flower removal.

** Cultivars ranked in decreasing order of total yield of U. S. No. 1 grade fruits. Data based on mean of 3 replications.

*** Lack of significant difference is likely due to extreme variations between replicate 1 and 2 and 3.

Table 2. Observation Stake Trial: Yield, Grade, and Fruit Size of Tomato Cultivars, Columbus, Ohio, 1981

Cultivar**	Seed Source	Total Harvest-Aug. 18 to Oct. 23, 1981* Marketable Yield (Tons/Acre) No. 1	Total	Percent By Weight No. 1	Cull	Fruit Size (oz.)
Castlehy 105	Castle	11.73	14.28	79	4	5.69
Mainpak	Harris	10.84	14.67	72	3	5.53
GS 430	Goldsmith	9.49	13.75	64	7	5.56
Duke	Peto	9.00	11.57	75	4	5.72
GS 244	Goldsmith	8.58	13.53	60	5	5.69
Market Hyb. #45	Ferry-Morse	7.76	12.47	57	8	5.85
Hybrid #1066	Stokes	7.28	12.26	55	8	3.74
Ultra Boy VFN	Stokes	7.24	13.21	50	9	5.36
Roadside Red	Agway	7.18	10.52	61	11	4.21
Tropic	Asgrow	7.06	12.34	52	9	6.42
GS 431	Goldsmith	6.83	10.78	59	8	6.38
Castlex 1051	Castle	6.80	11.27	52	14	5.21
Pole King Hyb.	Twilley	6.77	10.25	60	10	5.66
W2HF	Harris	6.60	11.60	55	3	4.08
XPH 674	Asgrow	6.42	10.74	55	8	4.66
NCX 3027	Niagara	6.37	10.29	57	7	5.85
Jackpot	Ferry-Morse	6.25	8.16	69	10	4.76
Traveler	Lethermans	6.03	8.87	61	10	4.37
XP 726	Asgrow	5.82	9.15	56	11	5.25
Basket Vee	Stokes	5.82	7.80	71	5	4.07
Super Fantastic VFN	Ball	5.78	12.38	45	3	4.85
Floradel	Asgrow	5.63	9.99	52	8	4.78
Better Girl	Northrup King	5.38	8.46	58	9	5.32
Market Hyb. #53	Ferry-Morse	5.37	8.07	62	7	5.16
Market Hyb. #52	Ferry-Morse	5.07	10.33	43	12	4.33
Market Hyb. #46A	Ferry-Morse	4.90	9.14	45	16	5.64
Park's Extra Early	Park	4.81	9.85	45	8	3.64
Floramerica	Peto	4.77	8.06	55	7	4.88
Ultra Girl VFN	Stokes	4.33	9.71	37	17	4.61
Quinte (Easy Peel)	Stokes	3.88	5.75	53	12	3.91
XP2041	Asgrow	3.65	5.52	50	24	4.56
Ohio 9WRP	Ohio State U.	3.27	7.55	36	17	4.20
Walter	Asgrow	3.15	6.45	35	28	4.52
Early Girl	Ball	3.15	6.11	49	6	3.62
Early Cascade	Peto	2.73	8.53	28	13	2.61
NCX 3050	Niagara	2.51	5.22	41	15	5.96
Earlirouge	Stokes	1.58	3.26	44	9	3.45
S-359	Stokes	1.19	4.76	21	18	3.03
#302	Stokes	0.27	6.66	3	20	1.80
#294	Stokes	0.0	7.56	-	16	1.82

* Early harvest lost due to flower removal.

** Cultivars ranked in decreasing order of total yield of U. S. No. 1 grade fruits.

Table 3. Fruit Disease Resistance[1], Fruit Quality Rating[2], and Plant Habit[3] for Stake Trial Cultivars

Cultivar[4]	Disease Resistance	Persistent Green Shoulder[5]	Concentric Cracking	Radial Cracking	Catface or Stylar Scar	Zippering	Blotchy or Uneven Ripening	Core Size	Internal Appearance[6]	Plant Habit
Replicated Stake:										
Ramapo	F_1V	4	3	4	5	3	4	3	3.5	Inde
Supersonic B	-	5	4.5	4.5	4.5	5	4.5	3.5	4	Inde
Super Red	F_1V	3	3	5	5	4.5	4.5	3	3.5	Inde
Burpee's Big Girl	F_1V	4	3.5	4.5	4.5	5	5	3.5	3.5	Inde
Jet Star	F_1V	-	3.5	5	4.5	3.5	4.5	3.5	4	Inde
PSR 25277	$F_{1+2}NTV$	4	3.5	4	5	4.5	4	3	4	Deter
Ohio 6WRP	F_1T	-	3	4.5	5	5	4	3.5	4	Inde
Better Boy VFN	F_1NV	3	2	4.5	4.5	4.5	4	3.5	4	Inde
Monte Carlo VFN	F_1NV	3	3	4	5	5	4.5	4.5	4.5	Inde
PSX 121375	$F_{1+2}NTV$	4	3.5	4.5	5	4.5	4.5	4	4.5	Deter
Observation Stake:										
Castlehy 105	$F_{1+2}SV$	4	3.5	4.5	5	5	4.5	2.5	4.5	Inde
Mainpak	-	4	4	4	5	5	4	3	4	Semi-det
GS 430	A_1F_1NTV	4	3.5	4	4.5	5	5	3	3.5	Inde
Duke	$F_{1+2}V$	5	4.5	4.5	5	4	4	3	3.5	Deter
GS 244	A_1F_1NTV	4	3.5	4.5	5	5	5	4	4.5	Inde
Market Hyb. #45	$F_{1+2}V$	-	1	3.5	4.5	4.5	4	2.5	3	Semi-det
Hybrid #1066	FV	3.5	3.5	4	5	5	4.5	3	3.5	Inde
Ultra Boy VFN	F_1NV	-	3	3.5	5	5	3	3	3.5	Inde
Roadside Red	F_1V	4	4	4	5	4.5	4.5	3	4	Inde
Tropic	F_1SV	4	3	4	4	4	3.5	2.5	3.5	Inde
GS 431	A_1F_1T	4	3.5	4.5	5	4.5	3.5	3.5	4	Inde
Castlex 1051	$F_{1+2}NSV$	-	4.5	4.5	4.5	5	5	5	5	Inde
Pole King Hyb.	$F_{1+2}V$	4	3	4.5	5	5	2	2.5	3.5	Inde
W2HF	-	4	4	5	5	5	5	3	4	Inde
XPH 674	A_1F_{1+2} SV	4	3	4.5	5	5	5	3.5	3.5	Semi-det
NCX 3027	$F_{1+2}V$	4	1	2	5	5	4.5	4	4	Semi-det
Jackpot	$F_{1+2}NV$	-	3	3.5	5	5	4	3	3.5	Inde
Traveler	-	-	5	5	5	5	5	3	3.5	Inde
XP 726	$A_1F_1SV_1$	3	2.5	4	4.5	5	4.5	3	3.5	Deter
Basket Vee	F_1V	-	3.5	4	5	5	4.5	4.5	4.5	Deter

Table 3. Fruit Disease Resistance, Quality and Plant Habit (Continued)

Cultivar[4]	Disease Resistance	Persistent Green Shoulder[5]	Concentric Cracking	Radial Cracking	Catface or Stylar Scar	Zippering	Blotchy or Uneven Ripening	Core Size	Internal Appearance[6]	Plant Habit
Observation Stake: (Continued)										
Super Fantastic VFN	F_1NV	3	2.5	4	4.5	4.5	3.5	3	3.5	Inde
Floradel	F_1	4	3	4	4.5	5	3	2.5	3.5	Inde
Better Girl	F_1NV	3	3	4	5	5	3	4	3.5	Inde
Market Hyb. #53	F_1V	-	2.5	3	5	5	4	4	4.5	Deter
Market Hyb. #52	F_{1+2}V	-	1	2.5	4.5	4.5	3	3.5	4.5	Deter
Market Hyb. #46A	F_{1+2}TV	-	2	3	5	4	3.5	2.5	3	Deter
Park's Extra Early	F_1V	5	4	4	5	4	5	3.5	4.5	Inde
Floramerica	F_{1+2}V	3	3	3	5	5	4	4	4.5	Deter
Ultra Girl VFN	F_1NV	-	2.5	4	5	5	4.5	3	3.5	Semi-det
Quinte (Easy Peel)	-	-	4.5	4.5	5	5	5	4	4	Deter
XP 2041	CF_{1+2}S	3	4	4.5	5	3	4.5	4	4	Deter
Ohio 9 WRP	F_1T	-	2.5	4	5	5	3.5	2.5	3	Inde
Walter	CF_{1+2}S	5	3	4	5	4.5	5	5	5	Deter
Early Girl	-	4	4.5	5	5	5	5	2.5	2.5	Inde
Early Cascade	F_1V	5	4	5	5	5	5	3	4	Inde
NCX 3050	F_1NV	-	1	2	5	4	3	3	3.5	Deter
Earlirouge	V	-	4	5	5	4	4.5	3	3.5	Deter
S-359	(none)	3	3	3.5	5	5	3.5	3	3	Inde
#302	-	5	5	5	5	4.5	5	4.5	4.5	Inde
#294	-	-	4	4.5	5	5	5	3	3.5	Inde

[1]Disease Resistance Codes: A_1= Alternaria Stem Canker, A_2 = Anthracnose (tolerance), C = Cladosporium Leaf Mold, E = Early Blight (tolerance), F_1 = Fusarium Wilt (race 1), F_2 = Fusarium Wilt (race 2), N = Root Knot Nematode, S = Stemphyllium, T = TMV, V = Verticillium

[2]Quality Ratings for all variables were made on a 1 to 5 scale where 5 indicates no problem and 1 is a severe problem.

[3]Plant Habit Abbreviations: Inde = Indeterminate, Deter = Determinate, Semi-Det. = Semi-Determinate.

[4]Cultivars are in the order they appear in Tables 1 and 2.

[5]No rating means the cultivar has the uniform ripening gene (no dark green shoulder).

[6]Internal appearance is based on internal color, and wall thickness.

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